EXHIBIT 208
REDACTED

[redacted], *nitish@*

Please read this first:

1. Writing plan. We tried:
   a. To make this mildly technical, with aggregated data / graphs. This aids in transparency / adds credibility, so it's doesn't sound like only marketing claims.
   b. To make it readable enough for a non-technical audience to understand what's going on.
   c. To not say that things have launched already, or to give lift numbers. If we did, publishers and buyers might want to check launch dates and validate our claims. If they happened to be one of those who benefit less from the feature, they could say "Google claims X, but we see only Y < X"; a few such claims could hurt perception significantly. In general, we do not want to provide data that others could plausibly try to contradict.
   d. Related to 'c' above, to present some of the data more as "Here's what we *observe* pre-optimization" and then say what we're going to do about it, rather than "here's the effect of the feature". Part of DRS is an exception, because we may want to show that everyone benefits.
2. Likely plan: Publish after Jedi announcement (mid-April), so no pushback from other exchanges saying "Google gets to do all these dynamic things, which we could do too if you set up header bidding."
3. Data / figures currently missing (to be gathered pending approval), but the text indicates what the data / figures would be.
4. Please focus first on content, and only then on writing style. Much of the text is illustrative and will be rewritten.
5. Tentative planned Length: 3-4 pages in a doc.
6. How do we wrap up overall or each segment? Say that we're exciting about launching these and improving ecosystem?

Comment [1]: Issue is that it may be tricky to say that things have launched or been in live experiments, and cannot give lift numbers.

We constantly search for ways to improve the digital advertising ecosystem. A healthy market needs both buyers and sellers to be successful, so we look for ways to increase efficiency and grow the whole pie, to improve revenue for publishers and give buyers more access to good inventory with a great ROI. As programmatic buying has grown rapidly (almost 50% in 2015), we've launched new features like Enhanced Dynamic Allocation and DoubleClick First Look, which allow real-time bidders to compete for premium inventory at a fair price.

Comment [2]: 47.9%; source: https://www.doubleclickbygoogle.com/programmaticnewyear/#/?utm_source=dclk-pub-blog&utm_medium=blog&utm_campaign=featured-promo

We're always looking for more to do, and we wanted to tell you about some of the things we've been thinking about lately: with a lot of different platforms for sellers to monetize and buyers to

acquire inventory, we'd like to provide more insight into what you get when you work with the DoubleClick Ad Exchange.

Pricing for publishers

The DoubleClick Ad Exchange runs a second-price auction for real-time bids on every impression (see our Auction Model). After each bidder submits a bid to the exchange, the highest bidder wins, and pays the second-highest price. Second-price auctions incentivize buyers to truthfully reveal their high bids without fear of being charged too much. The second-price auction also allows sellers to set a *reserve price* or floor; in order to win the impression, the highest bidder must bid (and pay) at least this reserve price. Reserve prices allow sellers to ensure that even in 'thin' markets with low bid density, they get a fair price for their inventory.

Though the Ad Exchange allows sellers to set reserve prices using rules set up in the Ad Exchange user interface, it's hard for most publishers to do so effectively. Buyers may value inventory based on arbitrary combinations of hundreds of dimensions, if not more: How would a news publisher know the relative value of a Chrome user on Android in Manhattan browsing the business section of their website, and a Firefox user on a desktop in San Diego, looking at the sports page? And let's not forget factors like creative type and size, the previous page(s) the users visited, or session depth, to name just a few.

Our data shows that most publishers set fewer than <num1> different reserve prices on their inventory, and more than 90% of publishers set fewer than <num2> reserve prices. These prices are updated, on average, <num3> times per month. As a result, the reserve prices that publishers set are often very far below the highest bids. This difference between the highest bid and the price the winner pays (the greater of the second-highest bid and the reserve price) is referred to as the *auction discount*, or the bid-price gap. Recently, we looked at the distribution of auction discounts across a representative sample of billions of auctions. The figure below shows our findings.

<Insert figure>

Each bar corresponds to a range of the relative auction discount (the ratio of the auction discount to the highest bid). The height of the bar represents the fraction of impressions with an auction discount in this range. Note that over <X%> of impressions have an auction discount greater than <Y%>.

Concerned about large auction discounts, publishers may respond by blocking their highest-value inventory from reaching an exchange altogether, or by setting too high a reserve price across many of these dimensions. Publishers also try to update their prices more frequently to capture regular patterns in the market - often teams of people manually update AdX rules.

While a few hundred or thousand dimensions may be hard for humans to comprehend and update, for computers, it's a piece of cake. Instead of ever increasing manual or semi-automated efforts for publishers to update these prices, we can use Google's next-generation machine learning technology to *automatically* adjust reserve prices to reduce the bid-price gap,

Comment [3]: I realize this is noted in thelast par of Pricing for Pubs, but I think it is worth highlighting here as it seems a little buried down below: All of these things happen (or can happen) in real-time on an ad call by ad call basis? It is important to note that we are reducing operational overhead using machine learning algos so publishers don't have to do it manually.

Comment [4]: Yes, on a per-query (ad call) basis. You're right that we should say something about it here; not 'machine learning algorithms', because there's a lot more than that, but we can and should emphasize this point.

Comment [5]: Don't think this is a public link - and it's different for buy and sell customer. Buy is here: https://support.google.com/adxbuyer/answer/6077702?hl=en

Comment [6]: Added update times as possible additional metric.

Comment [7]: Good suggestion. Will have to look into how to get this data.

Comment [8]: Histogram or CDF? CDF is a technically better representation, but non-technical readers may find it easier to parse bars than the CDF curve.

Comment [9]: Wanted to emphasize that pubs are moving in this direction *anyway* - they use APIs with other exchanges, or manual updates from DT based tools for AdX

Comment [10]: This is a very good point. I wonder, though, if it would be good to move it to the paragraph above the figure. I see two advantages:
1. We could say that there's all this manual effort, and it still is only a relatively small number that they update infrequently (assuming that's true). So it's a lot of work, and relatively pointless work.
2 The final paragraph then tells the buyer benefit story a little better. We've established that pubs can't really do it, and so this paragraph says that they block some inventory or set a reserve price far too high (because they don't know any better). If we adjusted automatically, buyers could actually compete and get access to this inventory.

while respecting publisher business rules expressed as AdX rules. This kind of Reserve Price Optimization allows publishers to improve monetization of their inventory, and allows buyers access to high-quality inventory they would otherwise be blocked from.

Dynamic Revenue Sharing

When publishers set a reserve price (which may correspond to their value from another selling opportunity like a reservation and in DoubleClick for Publishers), we make sure they are paid this price even after deducting Google's revenue share. For example, if our revenue share on a particular query is 10% and the publisher sets a reserve price of $0.90 CPM, real-time bidders have to pay at least the higher of $1 CPM and the second-highest bid, so that even after deducting 10%, the publisher receives 90% of $1 = $0.90.

What happens if the highest bidder only bids 98 cents? Though such a bidder would currently lose the auction, we *could* allow them to win at a discount, and still pay the publisher their minimum requirement of $0.90. However (since we never charge a buyer more than they bid), this would require reducing Google's revenue to under 8 cents, less than the negotiated 10%. This would be a win for both buyers and sellers, since we increase *match rate*: Sellers get more revenue from impressions that would have otherwise been unsold, and buyers get to win more impressions at a price less than their bid.

Google, though, bears the risk of a reduced revenue share. To restore the revenue share to its negotiated value, we may dynamically adjust the revenue share on a subsequent query: Sellers who benefit from this feature on one query may get a slightly reduced revenue share on a later query, but they are always paid at least their reserve price. Similarly, buyers who take advantage of this discount may face (slightly) higher prices in subsequent auctions, based on the history of previous queries where their bid was below the minimum payment including Google's revenue share ($1 in the previous example). We ensure that Google's average revenue share never exceeds the negotiated value for each publisher, and all buyers receive a net positive discount overall.

Based on recent simulations and experiments with Dynamic Revenue Sharing, the figures below shows the increase in match rate (fraction of queries sold in the auction) for publishers, and the increase in fraction of queries won for buyers.

<Insert figure(s)>
Buyer figure: Each bar represents an increase in match rate, and the height represents the fraction of sellers in this bar.
Seller figure: Each bar represents an increase in fraction of queries won, and the height presents the fraction of buyers in this bar.

Optimized Private Auctions

Comment [11]: Need to expand this a bid, or be more upfront about impact on buyers. How do we make sure buyers don't change spending patterns in a way that's bad for pubs or overall?

Comment [12]: This is a very difficult story to sell. Saying that Google might cut their share to help publishers win more is fine --- fits the idea that we'll get you the highest value for every ad and shows our commitment to pubs.

But we need to prove this actually increases the publisher's overall revenue in the short and long term to ensure this is something that fits the core value propositions of DRX.

Do we have any data demonstrating this?

Comment [13]: We are in the process of gathering such data, but we're confident from the design that this will be true. (At least, data can only validate short-term revenue. But there's no reason the long-term effects should be different.) The only case where it might no ...

Comment [14]: Add this reference to 3p reserve?

Comment [15]: Makes sense; I like the more concrete third party reserve example. Using reservation is also cool because:
(a) It's not another exchange; why draw ...

Comment [16]: We should argue about buyer surplus and sellers' revenue in addition to match-rate, e.g., In addition to match-rate, we could set the prices over time in a way that it ...

Comment [17]: How? If buyers bid true values, it decrease net surplus (=quasi-linear utility) for buyers. Of course, we think it will increase surplus because they aren't bidding ...

Comment [18]: but never higher than bid?

Comment [19]: Alternate phrasing: "... buyers who take advantage of this _feature_ may face ... previous queries where they received a discount".

Comment [20]: maybe end with "meaning more matched queries at a lower price" or similar to emphasize that buyer comes out ahead.

Comment [21]: Perhaps "... history of previous queries where they won at a price lower than the minimum payment including Google's revenue share ($1 in the previous ...

Comment [22]: As it is, this exposition of DRS can/may motivate buyers to hit the dynamic region. We should reword/add sth. to ensure buyers that bidding lower will not be in their ...

Comment [23]: I see that you touch upon this subject in the sentence above. We can emphasize on throttling or not taking advantage of this pricing discount if they get too much ...

Comment [24]: Yes, I tried to say that above, but wanted to end on a positive note for others. If we say that no-one can get too much discount, do you think it might weaken the ...

Private Auctions allow sellers to invite specific buyers to bid on their inventory. If any of these buyers bids at least the Private Auction reserve price, the highest bidder wins. If none of these buyers bids at least the reserve price, other buyers are allowed to bid in the Open Auction. Currently in AdX Private Auctions, if the highest Private Auction buyer bids above its reserve price, an Open Auction bidder is not eligible to win, *regardless of how much it bids*.

Among the programmatic advertising segments growing most rapidly is spend from buyers such as remarketers, with a very high CPM and low match rate. If, for example, the highest Private Auction buyer bids $4 CPM, and a remarketer bids $10 on the Open Auction, a better outcome would be for the remarketer to win and pay (for instance) $5. Since Private Auctions *typically* transact at higher prices than the Open Auction, this would not significantly impact the volume of inventory flowing through Private Auction. However, it would allow more efficient allocation of the rare high-value impressions to remarketers or other buyers willing to pay a premium for them.

Comment [25]: We may not want to call out remarketers specifically since DFL is already perceived as a remarketing product, we want to appeal to all OA buyers incl. agencies if possible.

The figure below shows the fraction of impressions currently won by a Private Auction buyer where there was an Open Auction buyer with a higher bid, the fraction where there was an Open Auction buyer with a bid 50 cents higher than the highest Private Auction buyer, $1 higher than the highest Private Auction buyer, and so on. Notice that on X% of impressions, there was an Open Auction buyer willing to pay $2 CPM more than the actual transaction price.

Comment [26]: Depending on data. This could be replaced by something like "OA buyer willing to pay 50% more than ... "

<Insert figure>

Enter *Optimized Private Auctions*. With this feature (an optional setting on AdX Private Auctions), Private Auction buyers receive a fixed “boost” of their bids (say $2). Now, we determine the winner by comparing the highest Open Auction bid and the sum of the highest Private Auction bid and the boost. Following the previous example, if the highest Private Auction buyer bids $4 with a boost of $2 and the remarketing Open Auction buyer bids $10, the remarketing buyer would win and pay $6. The boost is automatically calculated per publisher in order to maximize revenue, while ensuring that the total number of impressions won by Private Auctions does not decrease significantly. Optimized Private Auctions allow publishers to increase revenue, and gives buyers the opportunity to compete for high-value inventory in auctions they would otherwise lose.

We’re excited to be launching these new features, and to drive more growth in a healthy digital advertising market!

Comment [27]: Short conclusion (a sentence or two)? Depends on how we position launches in time. (We're launching these? Recently launched these? Will be launching later in the year?)
